

Science Year 2 Skills and knowledge documents to support medium term planning



	Autumn 1	Autumn 2	Spring 1	Spring 2	Summer 1	Summer 2
Topic	<u>Living things and their habitats</u> Habitats	<u>Materials</u> Uses of everyday materials	<u>Animals including humans</u> Lifecycles and health	<u>Living things and their habitats</u> Microhabitats	<u>Plants</u> Plant growth	<u>Making connections</u> Plant based materials

Progression of Working Scientifically Skills

	EYFS	Year 1	Year 2	Year 3	Year 4
Posing questions	<p>Noticing the world around me.</p> <p>Asking questions about the natural world with support.</p>	<p>Asking simple scientific questions and noticing that questions can be answered in different ways.</p> <p>Exploring the world around them and raising their own simple questions.</p> <p>Recognising there are different types of enquiry (ways to answer a question).</p> <p>Responding to suggestions on how to answer questions.</p>		<p>Asking my own scientific questions & using different ways to answer them.</p> <p>Beginning to raise further questions during the enquiry process.</p> <p>Considering what makes a testable question.</p> <p>Beginning to recognise that there are different types of enquiry and that they are suitable for different questions.</p> <p>Beginning to make suggestions about how different questions could be answered.</p>	
Planning	<p>Beginning to talk about what I can do and try my ideas.</p>	<p>Planning how to find things out with help (including planning tests)</p>		<p>Able to plan tests (inc. fair tests) with help.</p>	
Predicting	<p>Beginning to make guesses about what might happen.</p>	<p>Suggesting what might happen, often justifying with personal experience.</p>		<p>Making predictions about what they think will happen by:</p> <ul style="list-style-type: none"> • Using scientific Knowledge and/or personal experience to explain their prediction (because...) • Beginning to consider cause and effect when making predictions, where appropriate. • Predicting a trend by considering how the changing variable will affect the measured variable. (The smoother the surface, the longer the distance the car will travel) 	
Observing (Qualitative)	<p>Observing the natural world around them.</p>	<p>Able to observe, describe & compare.</p>		<p>Able to observe, describe & compare using scientific language.</p>	

	<p>Talking about what they can see.</p> <p>Commenting on what they see and hear in the natural world.</p>	<p>Using their senses to describe, in simple terms, what they notice or what has changed.</p>	<p>Using their senses to describe, in more detail and with simple scientific vocabulary, what they notice or what has changed.</p>
<p>Measuring (Quantitative)</p>	<p>Beginning to use equipment within my play (non-standard measures)</p> <p>Using non-standard units to measure.</p>	<p>Able to measure using non-standard and standard measures e.g. rulers, metre sticks, trundle wheels, weighing scales, balance scales)</p> <p>Using non-standard units to measure and compare.</p> <p>Beginning to use standard units and read simple scales to measure and compare.</p> <p>Beginning to use simple measuring equipment to make approximate measurements.</p>	<p>Able to use a variety of equipment to measure accurately (such as data loggers, newton meters, weighing scales, thermometers, stopwatches, rules, metre sticks, trundle wheels, measuring cylinders)</p> <p>Using standard units to measure and compare.</p> <p>Using measuring equipment with increasing accuracy.</p> <p>Reading scales with unmarked intervals between numbers.</p>
<p>Researching</p>	<p>Recognising that information can be found online and in books.</p>	<p>Gathering specific information from one simplified, specified source.</p>	<p>Gathering specific information from a variety of sources.</p>

Y2: Autumn 1

Living things and their habitats: Habitats

Enquiry question: Where do animals live?

<p>Prior learning: Y1 - Animals, including humans Identify and name a variety of common animals that are carnivores, herbivores and omnivores.</p> <ul style="list-style-type: none">• Identify, name, draw and label the basic parts of the human body and say which part of the body is associated with each sense. <p>Future learning: Y4 classification and changing habitats Y5 Life cycles Y6 Classifying big and small Evolution and inheritance</p>	<p>Knowledge:</p> <p>Begin to understand some of the life processes, including movement, reproduction, sensitivity, growth, excretion and nutrition.</p> <p>Explore and compare the differences between things that are living, dead, and things that have never been alive, using some of the life processes.</p> <p>Identify that most living things live in habitats to which they are suited and describe how different habitats provide for the basic needs of different kinds of animals and plants, and how they depend on each other.</p> <p>Identify and name a variety of plants and animals in their habitats, including microhabitats.</p> <p>Describe some differences between living things in a habitat.</p> <p>Describe how animals obtain their food from plants and other animals, using the idea of a simple food chain.</p> <p>Identify and name different sources of food.</p> <p>Name a variety of habitats, including woodland, ocean, rainforest and seashore.</p> <p>Know that a habitat is the environment where an animal or plant lives/ grows, because it provides what they need to survive.</p>	<p>Skills:</p> <p>Ask simple questions, recognising that they can be answered in different ways.</p> <p>Classify objects into groups.</p> <p>Gather and record data in a simple table.</p> <p>Carry out research to find answers to questions.</p> <p>Classify objects into alive, never been alive and was once alive, giving reasons for their choices.</p>	<p>Vocabulary:</p> <p>Life processes, living, dead, never living, food chain, food source, habitat, depend, survive, shelter, move, feed, water, air, conditions such as sunny, light, dark, shady, wet, damp, dry, hot, cold</p>
<p>Critical Content Statements:</p> <ul style="list-style-type: none">● All living things have life processes. They move, breathe, sense, grow, make babies, get rid of waste and get their energy from food.● Things that are living have all the life processes.		<p>Common Misconceptions Pupils May Have:</p> <p>Some children may think:</p> <ul style="list-style-type: none">• an animal's habitat is like its 'home'• all animals that live in the sea are fish	

- Things that are dead were once living. They did have all the life processes but don't now.
- Things made of metal, plastic or rock were never living and never had life processes.
- A food chain shows how each animal gets its food. They show how living things depend on each other to stay alive
- A habitat is a natural place where a plant or animal lives. A habitat provides living things with everything they need to survive such as food, shelter and water.
- Many living things in a habitat depend on each other. They need each other for different things.
- Survive means to stay alive.

- respiration is breathing
- breathing is respiration.

Y2: Autumn 2

Materials: Uses of everyday materials

Enquiry question: What is this made of?

Prior learning:	Knowledge:	Skills:	Vocabulary:
<p>Nursery - Use senses in hands on exploration of natural materials.</p> <p>Future learning:</p> <p>Y4 solids, liquids and gases</p>	<p>Identify and compare the suitability of a variety of everyday materials, including wood, metal, plastic, glass, brick, rock, paper and cardboard for specific uses.</p> <p>Find out how the shapes of solid objects made from some materials can be changed by squashing, bending, twisting and stretching.</p> <p>Know why objects are made from particular materials and give examples of their suitability.</p> <p>Know that one material can be used for a range of purposes (and to give examples.)</p> <p>Know that different materials can be used for the same purpose (and to give examples.)</p> <p>Know why certain materials are unsuitable for particular objects.</p>	<p>Name objects with the same use that are made from different materials.</p> <p>Name materials that are used to make objects with different uses.</p> <p>Recognise that stretching, twisting, bending and squashing can cause some solid objects to change shape.</p> <p>Name properties that make materials suitable for their use.</p> <p>Measure using non-standard units.</p> <p>Recording results in a table.</p> <p>Use data to answer a simple question.</p> <p>Record results in a block graph.</p>	<p>Names of materials – wood, metal, plastic, glass, brick, rock, paper, cardboard</p> <p>Properties of materials – as for Year 1 plus opaque, transparent and translucent, reflective, nonreflective, flexible, rigid</p> <p>Shape, push/pushing, pull/pulling, twist/twisting, squash/squashing, bend/bending, stretch/stretching.</p>

	<p>Know that a push or pull must be applied to change the shape of a solid object.</p> <p>Know that solid objects can be squashed, bent, twisted or stretched.</p> <p>Know that different solid objects may take a different amount of force to change shape.</p>		
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<p>Critical Content Statements:</p> <ul style="list-style-type: none"> • Objects are made from materials that suit their uses. • One material can be used for a range of different things. • Different materials can be used for the same purpose. • A push or pull can change the shape of a solid object. • Solid objects can be stretched, twisted, bent or stretched. • Different solid objects can take different amounts of force to change shape.

<p>Y2: Spring 1</p>

<p>Animals including humans: Life cycles and health</p>
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<p>Knowledge:</p> <p>Notice that animals, including humans, have offspring which grow into adults.</p> <p>Find out about and describe the basic needs of animals, including humans, for survival (water, food and air).</p> <p>Describe the importance for humans of exercise, eating the right amounts of different types of food, and hygiene.</p> <p>Identify stages in the life cycles of different animals, including humans.</p> <p>Describe the basic survival needs of animals.</p> <p>Explain how to take care of personal hygiene.</p>	<p>Skills:</p> <ul style="list-style-type: none"> • Measure using simple equipment. • Record results in a table. • Use data to answer a simple question. • Research using secondary sources. 	<p>Vocabulary:</p> <ul style="list-style-type: none"> • Offspring, reproduction, growth, child, young/old stages (examples - chick/hen, baby/child/adult, caterpillar/butterfly), • exercise, heartbeat, breathing, hygiene, germs, disease, food types (examples – meat, fish, vegetables, bread, rice, pasta)
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Describe some positive effects of exercise. Identify foods in different food groups.		
<p>Critical Content Statements:</p> <ul style="list-style-type: none">• Baby, toddler, child, teenager and adult are human life cycle stages.• There are differences in the life cycles of different animals.• Humans grow as they age.• The basic survival needs of animals are air, water and food.• Keeping clean prevents the spread of germs.• Washing our hands and changing our clothes are ways to keep clean.• Exercise can improve performance and well-being.• The five food groups are carbohydrates, fruits and vegetables, dairy and alternatives, protein and oils and spreads.• Humans require a balanced diet to stay healthy.		

Y2: Spring 2

Living things and their habitats: Microhabitats

Enquiry question: What is living here? Where do woodlice like to live? Why do they like it there?

Knowledge:

Know that a habitat is the environment where an animal or plant lives/ grows, because it provides what they need to survive.

Know that a micro-habitat is a very small habitat (e.g. stones, logs and leaf litter).

Identify and name a variety of plants and animals in their habitats, including microhabitats.

Identify that most living things live in habitats to which they are suited and describe how different habitats provide for the basic needs of different kinds of animals and plants, and how they depend on each other.

Know a variety of common plants and animals and describe some differences.

Describe how animals obtain their food from plants and other animals, using the idea of a simple food chain, and identify and name different sources of food.

Name a variety of habitats, including woodland, ocean, rainforest and seashore.

Know that living things depend upon each other (e.g. for food, shelter.)

Skills:

Posing questions

- Raising their own simple questions.
- Recognising that there are different types of enquiry.
- Responding to suggestions of how to answer questions.

Planning

- Deciding if observations are suitable
- Ordering a simple method.

Predicting

- Suggesting what might happen.

Observing

- Using their senses to describe what they notice.

Recording

- Recording results using simple observations and tally marks.

Classification keys

- Organising questions to create simple classification keys.

Analysing and drawing conclusions

Vocabulary:

Living, dead, never been alive, suited, suitable, basic needs, food, food chain, shelter, move, feed

Names of local habitats e.g. pond, woodland etc.

Names of micro-habitats e.g. under logs, in bushes etc.

light, shade, sun, warm, cool, water, grow, health, botanist, camouflage, characteristics, classification key, classify, fair test, conclusion, criteria, data, food chain, identify, invertebrate, method, microhabitat, minibeast, research, results, species, tally, survey, test.

- Using results to answer simple questions.

Critical Content Statements:

- A habitat is place where an animal or plant lives/grows because it provides what it needs to survive.
- A microhabitat is a very small habitat (eg under a stone)
- Living things need each other for food and shelter.

Common Misconceptions Pupils May Have:

Some children may think:

- an animal's habitat is like its 'home'
- respiration is breathing
- breathing is respiration.

Y2: Summer 1

Plants: Plant growth

<p>Prior learning: Year 1 Identify and name a variety of common wild and garden plants including deciduous and evergreen trees Identify and describe the basic structure of a variety of common flowering plants including trees.</p> <p>Future learning: Y3 – Identify and describe the functions of different parts of flowering plants for life and growth (air, light, water, nutrients from soil and room to grow) and how they vary from plant to plant. Investigate the way in which water is transported within plants. Explore the part that flowers play in the life cycle of flowering plants including pollination, seed formation and seed dispersal.</p>	<p>Knowledge: Observe and describe that seeds and bulbs grow into seedlings and mature plants by producing roots, stems, leaves and shoots.</p> <p>Know that seeds need water and warmth to germinate.</p> <p>Find out and describe how plants need water, light and a suitable temperature to grow and stay healthy.</p> <p>Know and describe the lifecycle of a flower (seed, shoot, seedling, leaves, flower).</p> <p>Know that seeds and bulbs grow into seedlings by producing roots and shoots and that seedlings grow into mature plants by developing parts such as roots, stems, leaves and flowers.</p>	<p>Skills: Posing questions</p> <ul style="list-style-type: none"> • Raising their own simple questions. • Recognising that there are different types of enquiry. • Responding to suggestions of how to answer questions. <p>Planning</p> <ul style="list-style-type: none"> • Deciding if observations are suitable • Ordering a simple method. <p>Predicting</p> <ul style="list-style-type: none"> • Suggesting what might happen. <p>Observing</p> <ul style="list-style-type: none"> • Using their senses to describe what they notice. <p>Recording</p> <ul style="list-style-type: none"> • Recording results using simple observations and tally marks. <p>Classification keys</p> <ul style="list-style-type: none"> • Organising questions to create simple classification keys. <p>Analysing and drawing conclusions</p> <ul style="list-style-type: none"> • Using results to answer simple questions. 	<p>Vocabulary</p> <p>Bulb, diagram, energy, flower, germinate, fruit, stem, wilt, seedling, seed coat, growth, leaf, life cycle, nutrient, observe, seed, shoot, stem. Light shade, Sun, warm, cool, water, space, grow, healthy,</p>
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<p>Critical Content Statements:</p> <ul style="list-style-type: none"> • Leaves use light to make food for the plant. • Roots take up water and nutrients from the soil. • Flowers make seeds so new plants can grow.

<p>Common Misconceptions Pupils May Have: Some children may think:</p> <ul style="list-style-type: none"> • plants are not alive as they cannot be seen to move • seeds are not alive
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- Seeds contain a store of energy.
- Germination is when a new plant starts to grow.
- A seed needs water and warmth to germinate.
- The shoot is the first green part of a plant to grow from a seed.
- Plants need water, light and warmth for healthy growth.

- all plants start out as seeds
- seeds and bulbs need sunlight to germinate.

Y2: Summer 2

Making connections : Plant based materials

Enquiry questions: What materials would make a good plant pot?

Knowledge:

Explain the terms reduce, reuse and recycle.
 Describe how paper is made.
 Select suitable materials for a plant pot.
 Describe good growth conditions for seeds.
 Make a plant pot from eco-friendly materials.
 Identify non-living materials to decorate a plant pot.

Skills:

Use an online source to find answers to questions.
 Identify and classify different types of material.
 Classify natural and human-made materials.
 Carry out tests to assess the properties of different materials.
 Use observations to answer questions.
 Draw conclusions about the suitability of materials.

Vocabulary:

Alive, dead, fabric, flexible, germinate, growth, invention, life processes, material, plastic, property, results, seed, suitable, test, waterproof, wood.